WHAT IS CLAIMED IS:

1. A Mach-Zehnder interferometer optical switch comprising:

two optical waveguides having refractive index temperature coefficients with opposite signs, the two optical waveguides being in the vicinity of each other at two locations such that two directional couplers are provided at the two locations and including respective optical waveguide arms between the two directional couplers; and

a heater which heats at least one of the two optical waveguide arms.

2. A Mach-Zehnder interferometer optical switch according to Claim 1, wherein the heater heats both of the two optical waveguide arms.

3. A Mach-Zehnder interferometer optical switch according to Claim 1, wherein one of the two optical waveguides comprises a first material selected from the group consisting of TiO_2, $PbMoO_4$, and Ta_2O_5, the first material having a negative refractive index temperature coefficient, and the other optical waveguide comprises a second material selected from the group consisting of $LiNbO_3$, lead lanthanum zirconate titanate, and SiO_xN_y, the second material having a positive refractive index temperature coefficient.

4. A Mach-Zehnder interferometer optical switch

according to Claim 1, wherein $\delta/\kappa \leq 0.2$ is satisfied, where δ is one-half of the difference between the transmission coefficients of the two optical waveguides and κ is the coupling coefficient.

5. A Mach-Zehnder interferometer optical switch according to Claim 1, wherein the physical lengths of the two optical waveguides are different from each other and are set such that the effective optical path lengths of the two optical waveguides for light with a predetermined wavelength are the same in the region between the directional couplers.

6. A Mach-Zehnder interferometer temperature sensor comprising:

two optical waveguides having refractive index temperature coefficients with opposite signs, the two optical waveguides being in the vicinity of each other at two locations such that two directional couplers are provided at the two locations and including respective optical waveguide arms between the two directional couplers.

7. A Mach-Zehnder interferometer temperature sensor according to Claim 6, wherein the two optical waveguide arms have the same physical length.

8. A Mach-Zehnder interferometer temperature sensor according to Claim 6, wherein $\delta/\kappa \leq 0.2$ is satisfied, where δ is one-half of the difference between the transmission

coefficients of the two optical waveguides and κ is the coupling coefficient.

9. A Mach-Zehnder interferometer temperature sensor according to Claim 6, wherein one of the two optical waveguides comprises a first material selected from the group consisting of TiO_2, $PbMoO_4$, and Ta_2O_5, the first material having a negative refractive index temperature coefficient, and the other optical waveguide comprises a second material selected from the group consisting of $LiNbO_3$, lead lanthanum zirconate titanate, and SiO_xN_y, the second material having a positive refractive index temperature coefficient.